FIG. 1

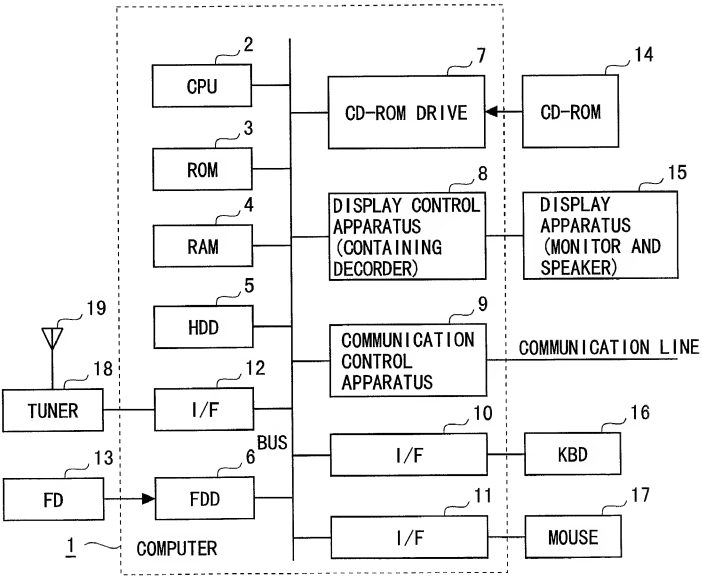
2
CPU
3
ROM
4
RAM
5
HDD
19
18
TUNER
12
I/F
13
FD
6
FDD
1
COMPUTER
BUS
7
CD-ROM DRIVE
14
CD-ROM
8
DISPLAY CONTROL APPARATUS (CONTAINING DECORDER)
15
DISPLAY APPARATUS (MONITOR AND SPEAKER)
9
COMMUNICATION CONTROL APPARATUS
COMMUNICATION LINE
10
I/F
16
KBD
11
I/F
17
MOUSE

FIG. 2

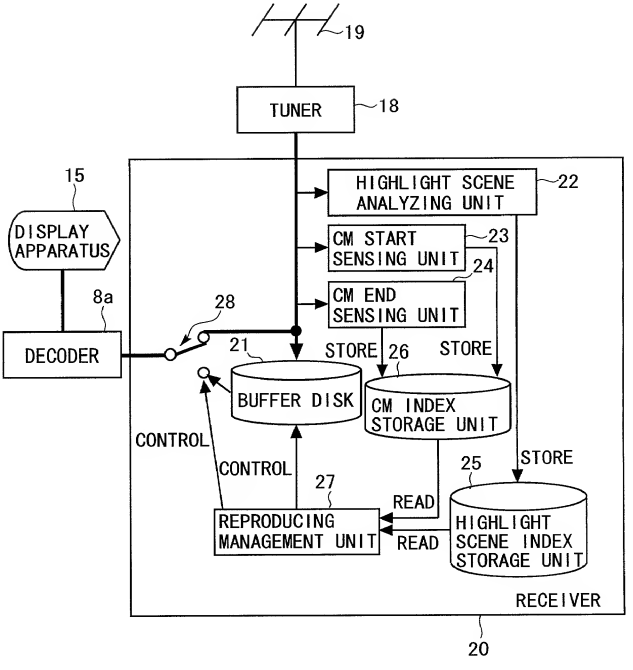
19
TUNER
18
15
DISPLAY APPARATUS
8a
DECODER
28
HIGHLIGHT SCENE ANALYZING UNIT
22
CM START SENSING UNIT
23
24
CM END SENSING UNIT
21
STORE
26
STORE
BUFFER DISK
CM INDEX STORAGE UNIT
CONTROL
CONTROL
27
25
STORE
READ
REPRODUCING MANAGEMENT UNIT
READ
HIGHLIGHT SCENE INDEX STORAGE UNIT
RECEIVER
20

FIG. 3

25

STARTING TIME INSTANT	STARTING ADDRESS	END TIME INSTANT	END ADDRESS	LENGTH
10:00:00	a000	10:04:00	a004	00:04:00
10:10:20	a102	10:12:59	a125	00:02:39
10:16:15	a161	10:24:30	a243	00:08:15
10:33:10	a331	10:38:09	a380	00:04:59
...		...		...

FIG. 4

26

STARTING TIME INSTANT	STARTING ADDRESS	END TIME INSTANT	END ADDRESS	LENGTH
10:13:00	a130	10:15:00	a150	00:02:00
10:28:00	a280	10:30:00	a300	00:02:00
10:43:00	a430	10:45:00	a450	00:02:00
...		...		...

FIG. 5

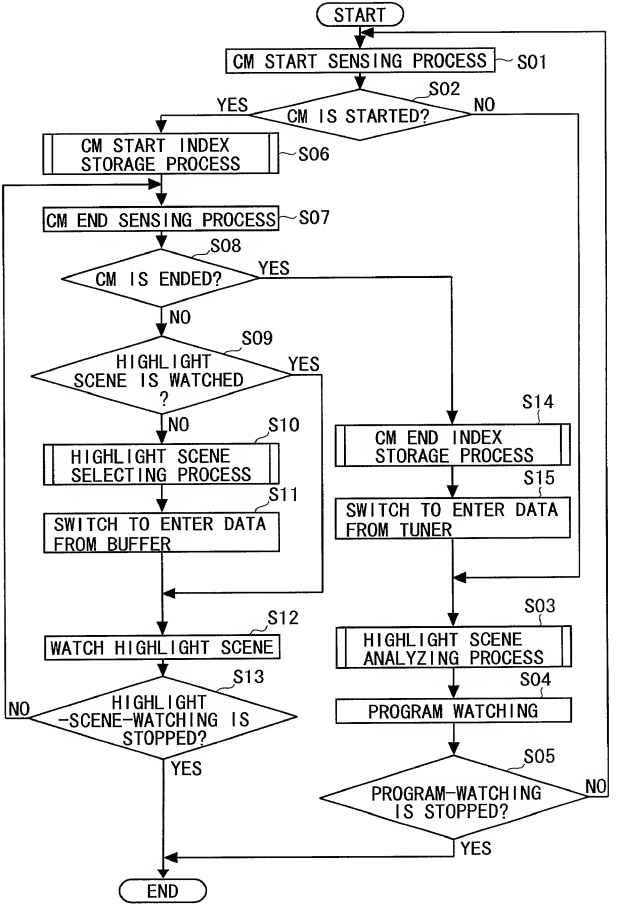
START
CM START SENSING PROCESS
S01
S02
CM IS STARTED?
YES
NO
CM START INDEX STORAGE PROCESS
S06
CM END SENSING PROCESS
S07
S08
CM IS ENDED?
YES
NO
S09
HIGHLIGHT SCENE IS WATCHED ?
YES
NO
S10
HIGHLIGHT SCENE SELECTING PROCESS
S11
SWITCH TO ENTER DATA FROM BUFFER
S12
WATCH HIGHLIGHT SCENE
S13
HIGHLIGHT -SCENE-WATCHING IS STOPPED?
NO
YES
S14
CM END INDEX STORAGE PROCESS
S15
SWITCH TO ENTER DATA FROM TUNER
S03
HIGHLIGHT SCENE ANALYZING PROCESS
S04
PROGRAM WATCHING
S05
PROGRAM-WATCHING IS STOPPED?
NO
YES
END

FIG. 6

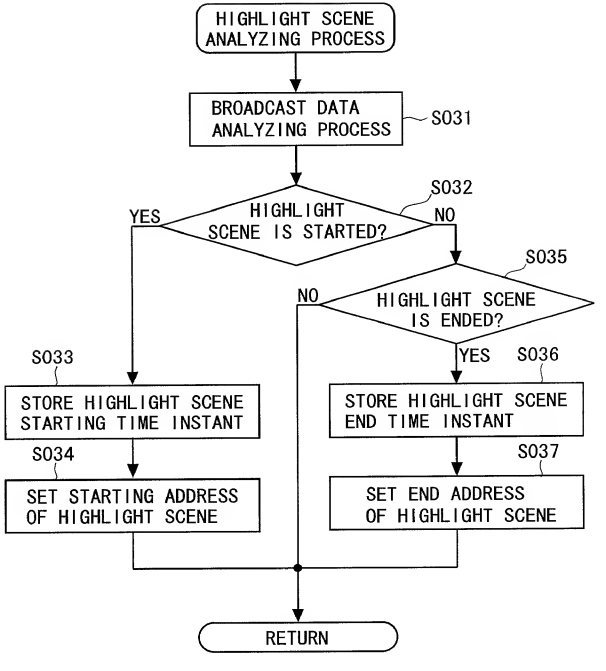
HIGHLIGHT SCENE ANALYZING PROCESS
BROADCAST DATA ANALYZING PROCESS
S031
S032
HIGHLIGHT SCENE IS STARTED?
YES
NO
S035
HIGHLIGHT SCENE IS ENDED?
NO
YES
S033
STORE HIGHLIGHT SCENE STARTING TIME INSTANT
S034
SET STARTING ADDRESS OF HIGHLIGHT SCENE
S036
STORE HIGHLIGHT SCENE END TIME INSTANT
S037
SET END ADDRESS OF HIGHLIGHT SCENE
RETURN

FIG. 7

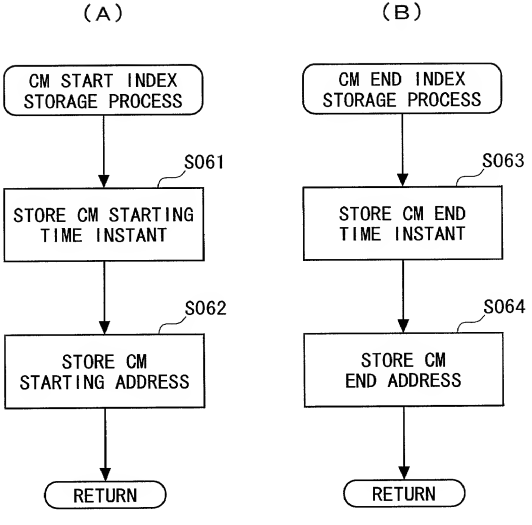
(A)
CM START INDEX STORAGE PROCESS
S061
STORE CM STARTING TIME INSTANT
S062
STORE CM STARTING ADDRESS
RETURN
(B)
CM END INDEX STORAGE PROCESS
S063
STORE CM END TIME INSTANT
S064
STORE CM END ADDRESS
RETURN

FIG. 8

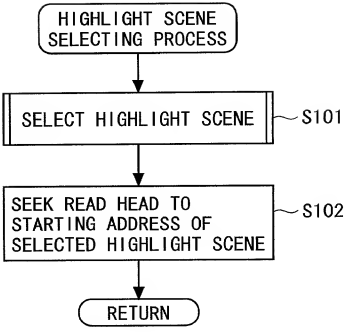
HIGHLIGHT SCENE SELECTING PROCESS
SELECT HIGHLIGHT SCENE
S101
SEEK READ HEAD TO STARTING ADDRESS OF SELECTED HIGHLIGHT SCENE
S102
RETURN

FIG. 9

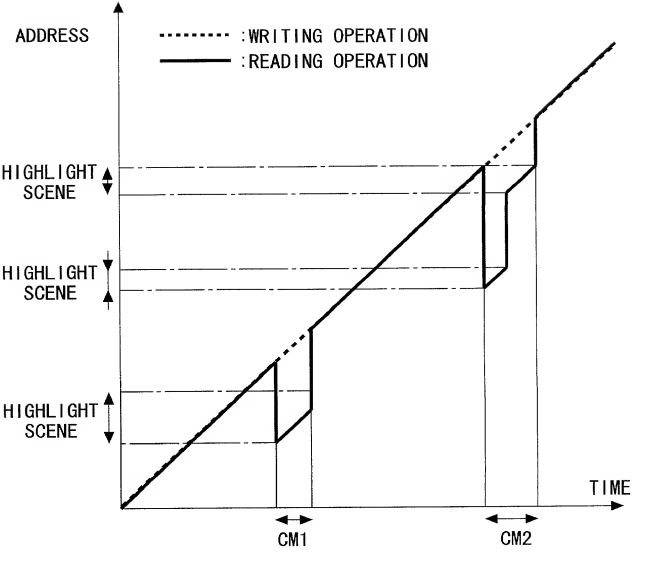
ADDRESS
:WRITING OPERATION
:READING OPERATION
HIGHLIGHT SCENE
HIGHLIGHT SCENE
HIGHLIGHT SCENE
TIME
CM1
CM2

FIG. 10

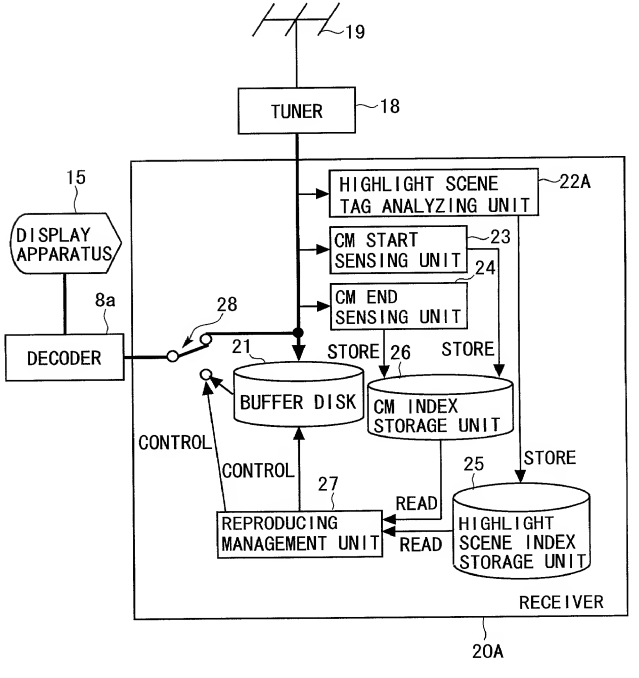
19
TUNER
18
15
DISPLAY APPARATUS
8a
DECODER
28
HIGHLIGHT SCENE TAG ANALYZING UNIT
22A
CM START SENSING UNIT
23
24
CM END SENSING UNIT
21
STORE
26
STORE
BUFFER DISK
CM INDEX STORAGE UNIT
CONTROL
CONTROL
27
25
STORE
READ
REPRODUCING MANAGEMENT UNIT
READ
HIGHLIGHT SCENE INDEX STORAGE UNIT
RECEIVER
20A

FIG. 11

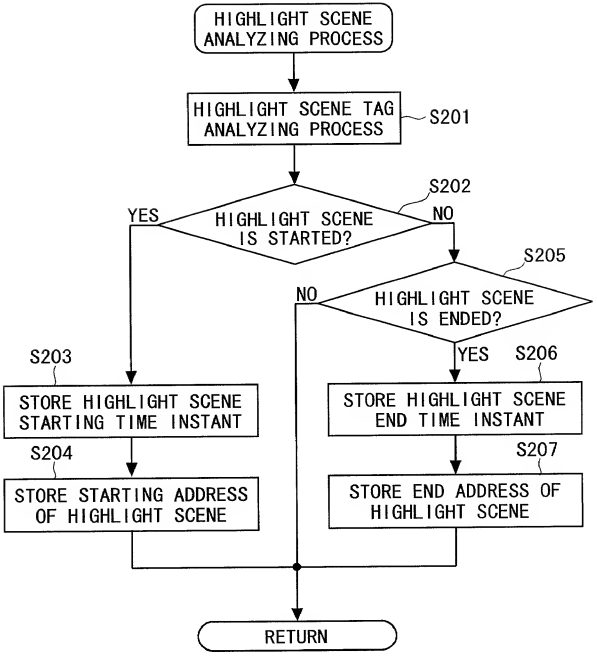
HIGHLIGHT SCENE ANALYZING PROCESS
HIGHLIGHT SCENE TAG ANALYZING PROCESS
S201
S202
YES
HIGHLIGHT SCENE IS STARTED?
NO
S205
NO
HIGHLIGHT SCENE IS ENDED?
YES
S203
S206
STORE HIGHLIGHT SCENE STARTING TIME INSTANT
STORE HIGHLIGHT SCENE END TIME INSTANT
S204
S207
STORE STARTING ADDRESS OF HIGHLIGHT SCENE
STORE END ADDRESS OF HIGHLIGHT SCENE
RETURN

FIG. 12

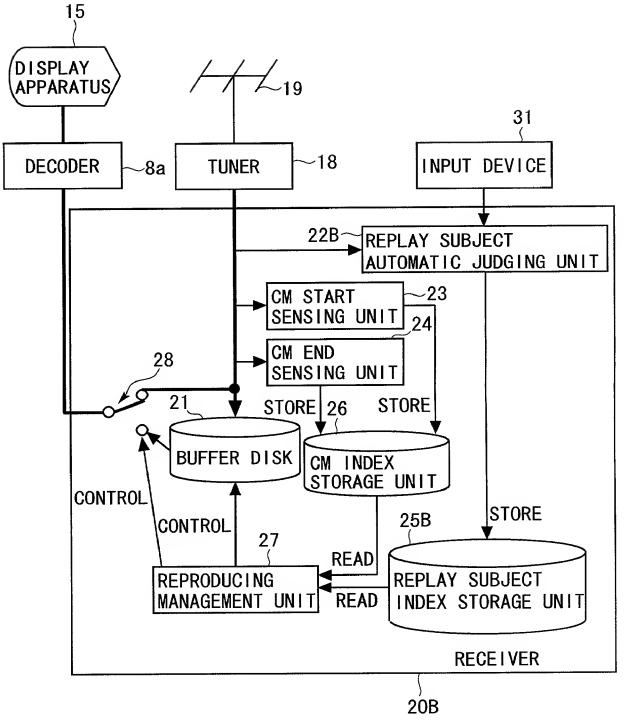
15
DISPLAY APPARATUS
19
31
DECODER
8a
TUNER
18
INPUT DEVICE
22B
REPLAY SUBJECT AUTOMATIC JUDGING UNIT
CM START SENSING UNIT
23
24
CM END SENSING UNIT
28
21
STORE
26
STORE
BUFFER DISK
CM INDEX STORAGE UNIT
CONTROL
CONTROL
25B
STORE
27
READ
REPRODUCING MANAGEMENT UNIT
READ
REPLAY SUBJECT INDEX STORAGE UNIT
RECEIVER
20B

FIG. 13

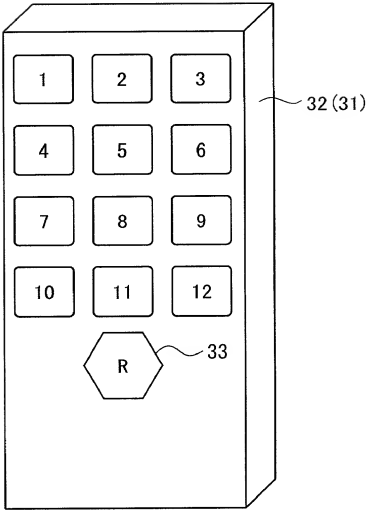

FIG. 14

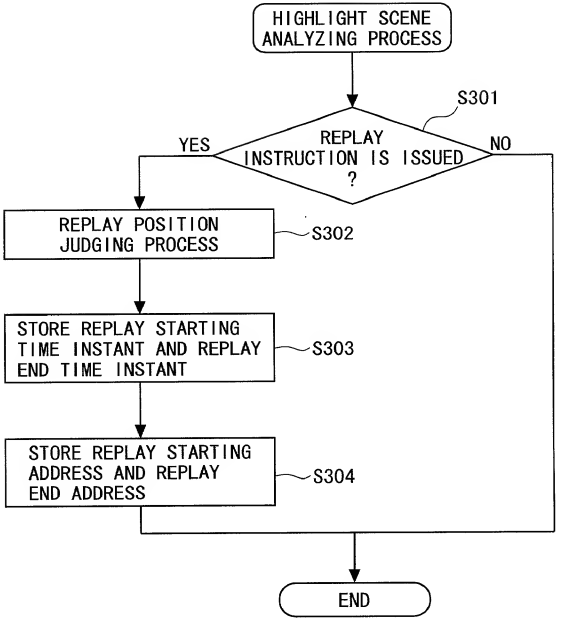
HIGHLIGHT SCENE ANALYZING PROCESS
S301
REPLAY INSTRUCTION IS ISSUED ?
YES
NO
REPLAY POSITION JUDGING PROCESS
S302
STORE REPLAY STARTING TIME INSTANT AND REPLAY END TIME INSTANT
S303
STORE REPLAY STARTING ADDRESS AND REPLAY END ADDRESS
S304
END

FIG. 15

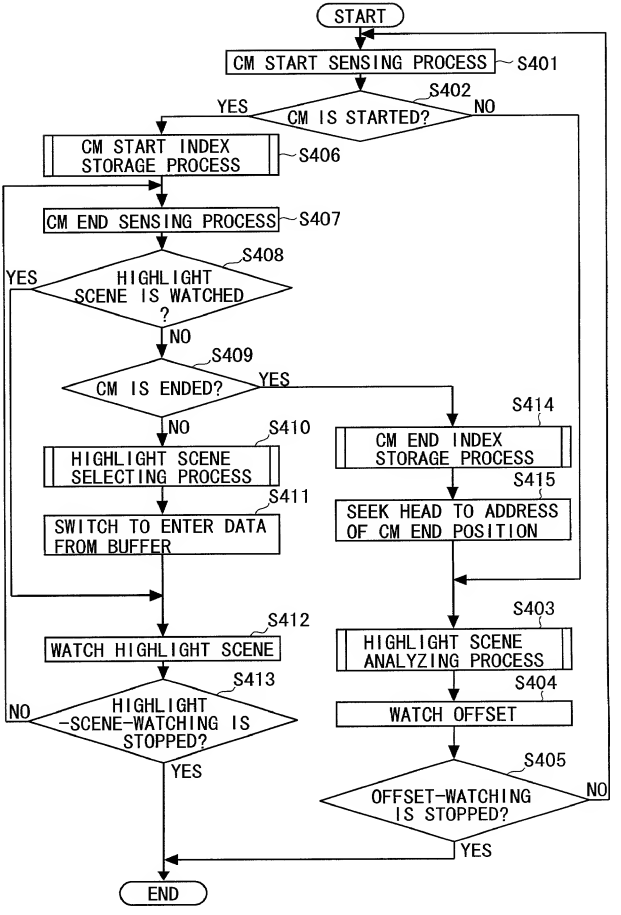
START
CM START SENSING PROCESS
S401
S402
CM IS STARTED?
YES
NO
CM START INDEX STORAGE PROCESS
S406
CM END SENSING PROCESS
S407
S408
HIGHLIGHT SCENE IS WATCHED ?
YES
NO
S409
CM IS ENDED?
YES
NO
S410
HIGHLIGHT SCENE SELECTING PROCESS
S411
SWITCH TO ENTER DATA FROM BUFFER
S412
WATCH HIGHLIGHT SCENE
S413
HIGHLIGHT -SCENE-WATCHING IS STOPPED?
NO
YES
S414
CM END INDEX STORAGE PROCESS
S415
SEEK HEAD TO ADDRESS OF CM END POSITION
S403
HIGHLIGHT SCENE ANALYZING PROCESS
S404
WATCH OFFSET
S405
OFFSET-WATCHING IS STOPPED?
NO
YES
END

FIG. 16

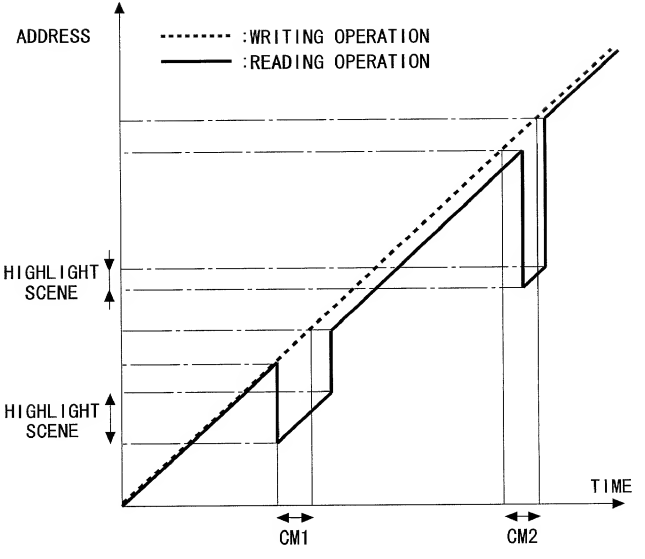
ADDRESS
:WRITING OPERATION
:READING OPERATION
HIGHLIGHT SCENE
HIGHLIGHT SCENE
TIME
CM1
CM2

FIG. 17

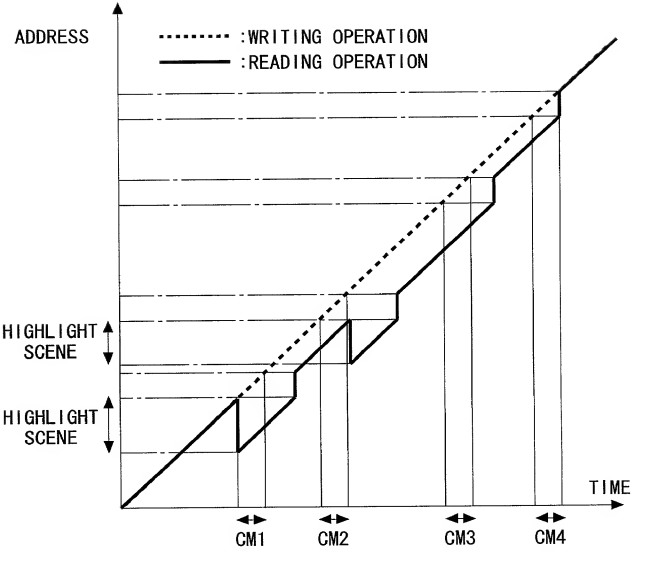
ADDRESS
:WRITING OPERATION
:READING OPERATION
HIGHLIGHT SCENE
HIGHLIGHT SCENE
TIME
CM1
CM2
CM3
CM4

FIG. 18

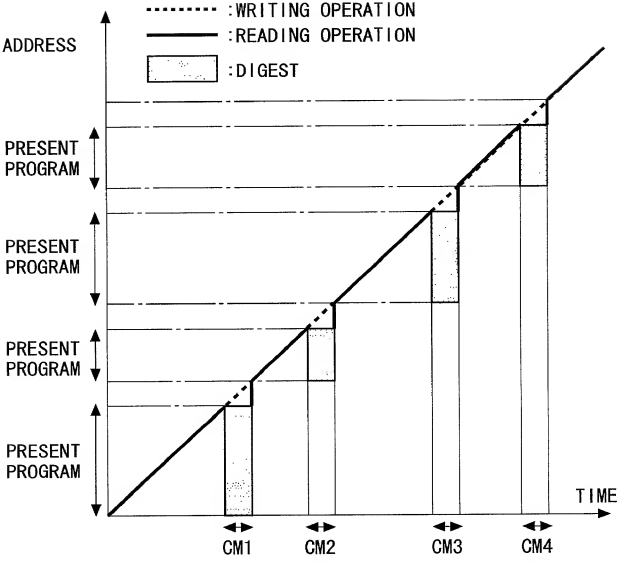
:WRITING OPERATION
:READING OPERATION
:DIGEST
ADDRESS
PRESENT PROGRAM
PRESENT PROGRAM
PRESENT PROGRAM
PRESENT PROGRAM
TIME
CM1
CM2
CM3
CM4

FIG. 19

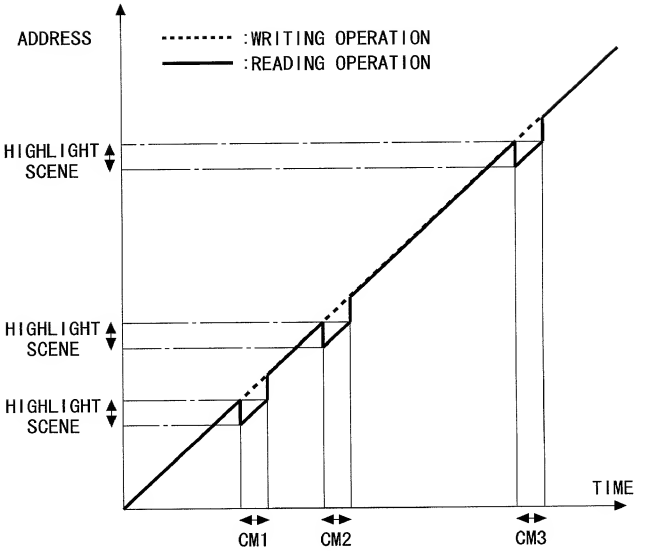
ADDRESS
:WRITING OPERATION
:READING OPERATION
HIGHLIGHT SCENE
HIGHLIGHT SCENE
HIGHLIGHT SCENE
TIME
CM1
CM2
CM3

FIG. 20

25H

STARTING TIME INSTANT	STARTING ADDRESS	END TIME INSTANT	END ADDRESS	LENGTH	WEIGHT
10:00:00	a000	10:04:00	a004	00:04:00	10
10:10:20	a102	10:12:59	a125	00:02:39	8
10:16:15	a161	10:24:30	a243	00:08:15	4
10:33:10	a331	10:38:09	a380	00:04:59	7
...		...		...	

FIG. 21

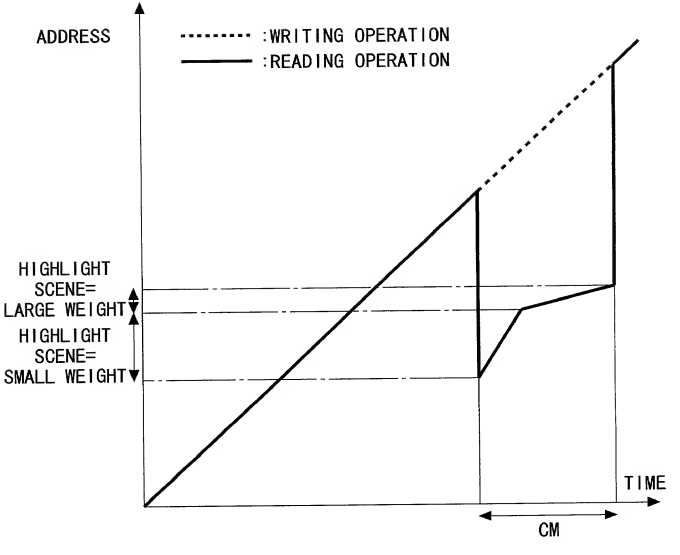
ADDRESS
:WRITING OPERATION
:READING OPERATION
HIGHLIGHT SCENE= LARGE WEIGHT
HIGHLIGHT SCENE= SMALL WEIGHT
TIME
CM

FIG. 22

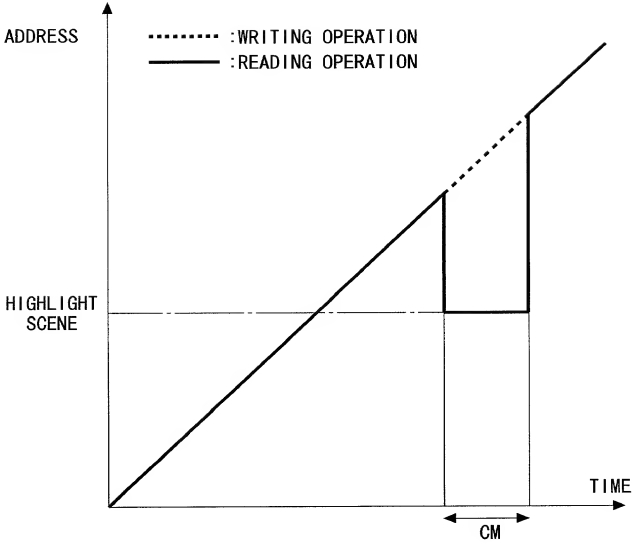
ADDRESS
:WRITING OPERATION
:READING OPERATION
HIGHLIGHT SCENE
TIME
CM

FIG. 23

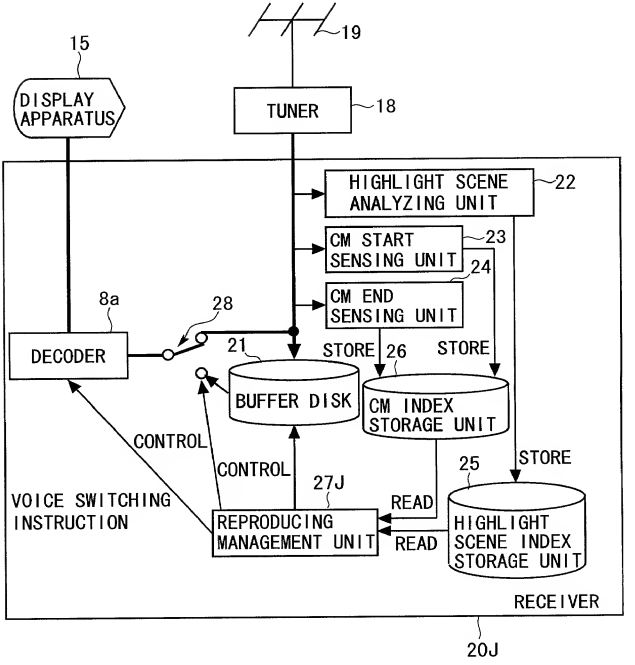
15
DISPLAY APPARATUS
19
TUNER
18
HIGHLIGHT SCENE ANALYZING UNIT
22
CM START SENSING UNIT
23
24
CM END SENSING UNIT
8a
28
DECODER
21
STORE
26
STORE
BUFFER DISK
CM INDEX STORAGE UNIT
CONTROL
CONTROL
27J
25
STORE
VOICE SWITCHING INSTRUCTION
READ
REPRODUCING MANAGEMENT UNIT
READ
HIGHLIGHT SCENE INDEX STORAGE UNIT
RECEIVER
20J

FIG. 24

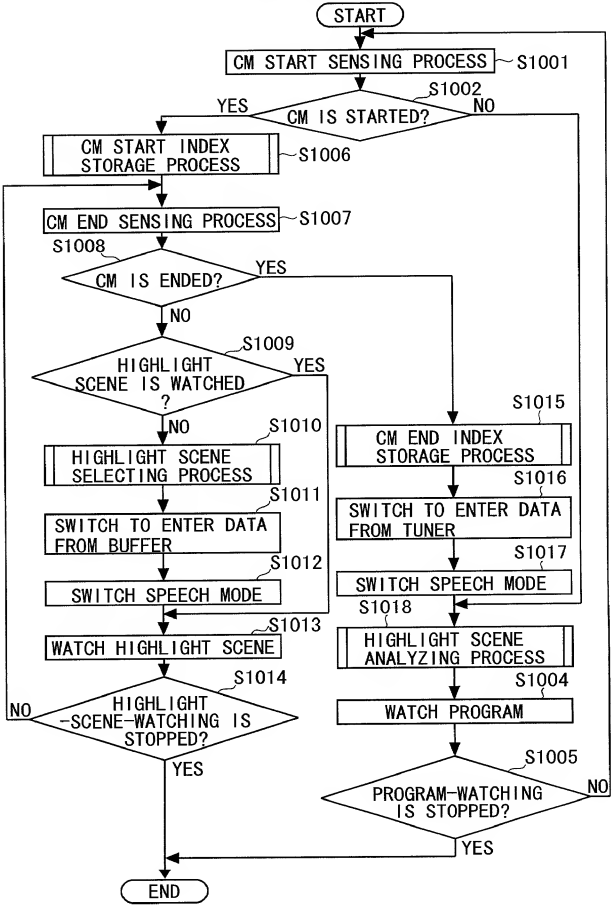
START
CM START SENSING PROCESS
S1001
S1002
CM IS STARTED?
YES
NO
CM START INDEX STORAGE PROCESS
S1006
CM END SENSING PROCESS
S1007
S1008
CM IS ENDED?
YES
NO
S1009
HIGHLIGHT SCENE IS WATCHED ?
YES
NO
S1010
HIGHLIGHT SCENE SELECTING PROCESS
S1011
SWITCH TO ENTER DATA FROM BUFFER
S1012
SWITCH SPEECH MODE
S1013
WATCH HIGHLIGHT SCENE
S1014
HIGHLIGHT -SCENE-WATCHING IS STOPPED?
NO
YES
S1015
CM END INDEX STORAGE PROCESS
S1016
SWITCH TO ENTER DATA FROM TUNER
S1017
SWITCH SPEECH MODE
S1018
HIGHLIGHT SCENE ANALYZING PROCESS
S1004
WATCH PROGRAM
S1005
PROGRAM-WATCHING IS STOPPED?
NO
YES
END

FIG. 25

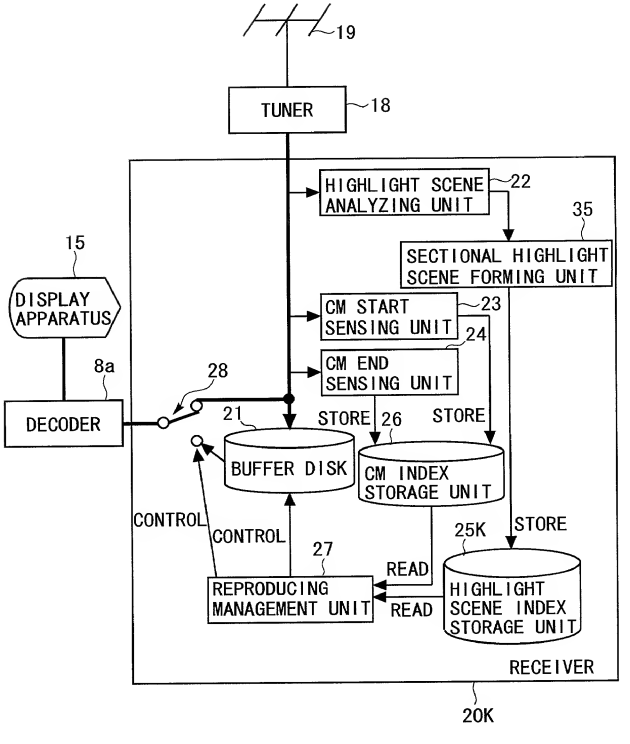
19
TUNER
18
HIGHLIGHT SCENE ANALYZING UNIT
22
35
SECTIONAL HIGHLIGHT SCENE FORMING UNIT
15
DISPLAY APPARATUS
CM START SENSING UNIT
23
24
CM END SENSING UNIT
8a
28
DECODER
21
STORE
26
STORE
BUFFER DISK
CM INDEX STORAGE UNIT
CONTROL
CONTROL
27
25K
STORE
READ
REPRODUCING MANAGEMENT UNIT
READ
HIGHLIGHT SCENE INDEX STORAGE UNIT
RECEIVER
20K

FIG. 26

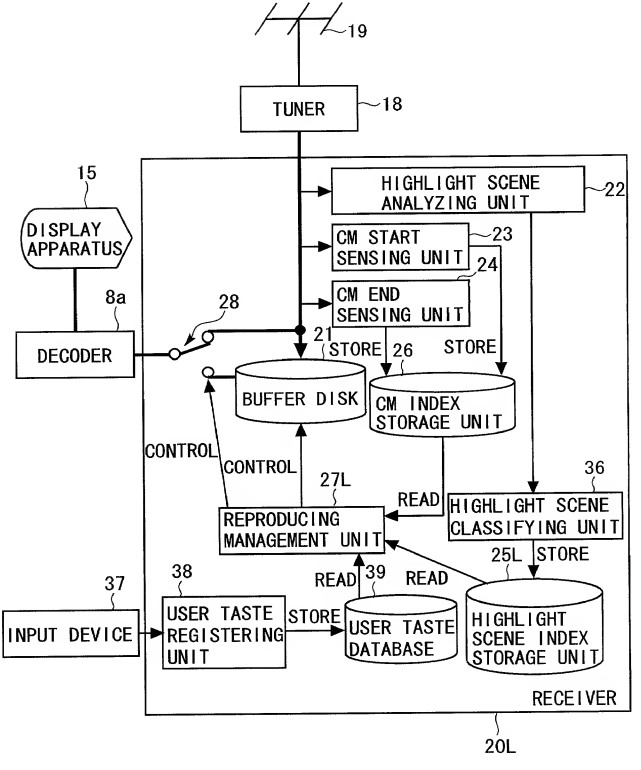
19
TUNER
18
15
DISPLAY APPARATUS
8a
DECODER
28
21
HIGHLIGHT SCENE ANALYZING UNIT
22
CM START SENSING UNIT
23
24
CM END SENSING UNIT
STORE
26
STORE
BUFFER DISK
CM INDEX STORAGE UNIT
CONTROL
CONTROL
27L
READ
36
HIGHLIGHT SCENE CLASSIFYING UNIT
REPRODUCING MANAGEMENT UNIT
25L
STORE
37
38
READ
39
READ
INPUT DEVICE
USER TASTE REGISTERING UNIT
STORE
USER TASTE DATABASE
HIGHLIGHT SCENE INDEX STORAGE UNIT
RECEIVER
20L

FIG. 27

25L

STARTING TIME INSTANT	STARTING ADDRESS	END TIME INSTANT	END ADDRESS	LENGTH	GENRE
10:00:00	a000	10:04:00	a004	00:04:00	10
10:10:20	a102	10:12:59	a125	00:02:39	8
10:16:15	a161	10:24:30	a243	00:08:15	4
10:33:10	a331	10:38:09	a380	00:04:59	7
...		...		...	

FIG. 28

39

GENRE	TASTE DEGREE
1	10
2	2
3	5
4	6
...	...

FIG. 29

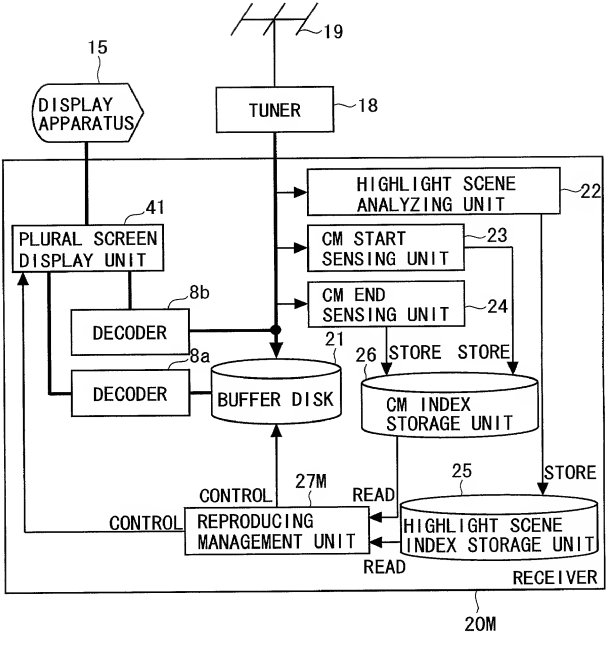
19
15
DISPLAY APPARATUS
TUNER
18
HIGHLIGHT SCENE ANALYZING UNIT
22
41
PLURAL SCREEN DISPLAY UNIT
CM START SENSING UNIT
23
8b
CM END SENSING UNIT
24
DECODER
21
26
STORE
STORE
8a
DECODER
BUFFER DISK
CM INDEX STORAGE UNIT
25
STORE
CONTROL
27M
READ
CONTROL
REPRODUCING MANAGEMENT UNIT
HIGHLIGHT SCENE INDEX STORAGE UNIT
READ
RECEIVER
20M

FIG. 30

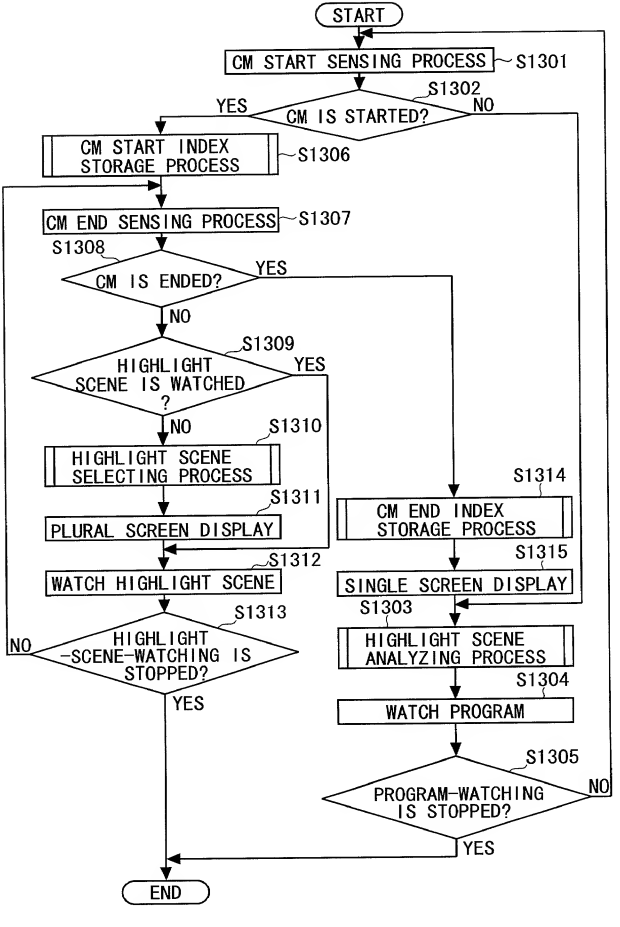
START
CM START SENSING PROCESS
S1301
S1302
CM IS STARTED?
YES
NO
CM START INDEX STORAGE PROCESS
S1306
CM END SENSING PROCESS
S1307
S1308
CM IS ENDED?
YES
NO
S1309
HIGHLIGHT SCENE IS WATCHED ?
YES
NO
S1310
HIGHLIGHT SCENE SELECTING PROCESS
S1311
PLURAL SCREEN DISPLAY
S1312
WATCH HIGHLIGHT SCENE
S1313
HIGHLIGHT -SCENE-WATCHING IS STOPPED?
NO
YES
S1314
CM END INDEX STORAGE PROCESS
S1315
SINGLE SCREEN DISPLAY
S1303
HIGHLIGHT SCENE ANALYZING PROCESS
S1304
WATCH PROGRAM
S1305
PROGRAM-WATCHING IS STOPPED?
NO
YES
END

FIG. 31

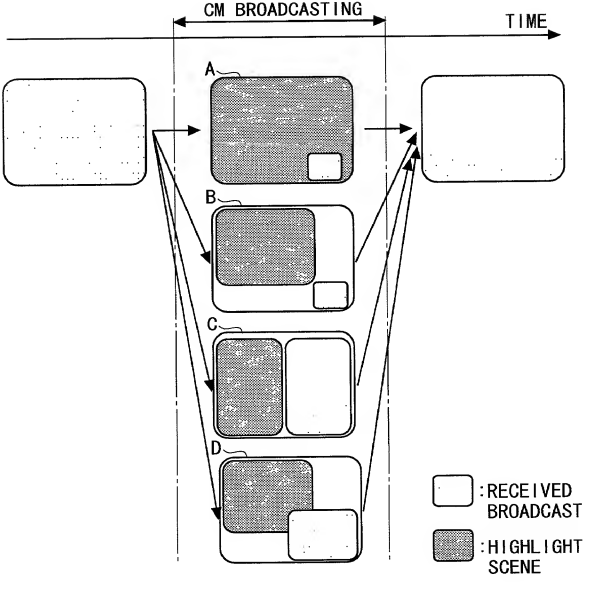
CM BROADCASTING
TIME
A
B
C
D
:RECEIVED BROADCAST
:HIGHLIGHT SCENE

FIG. 32

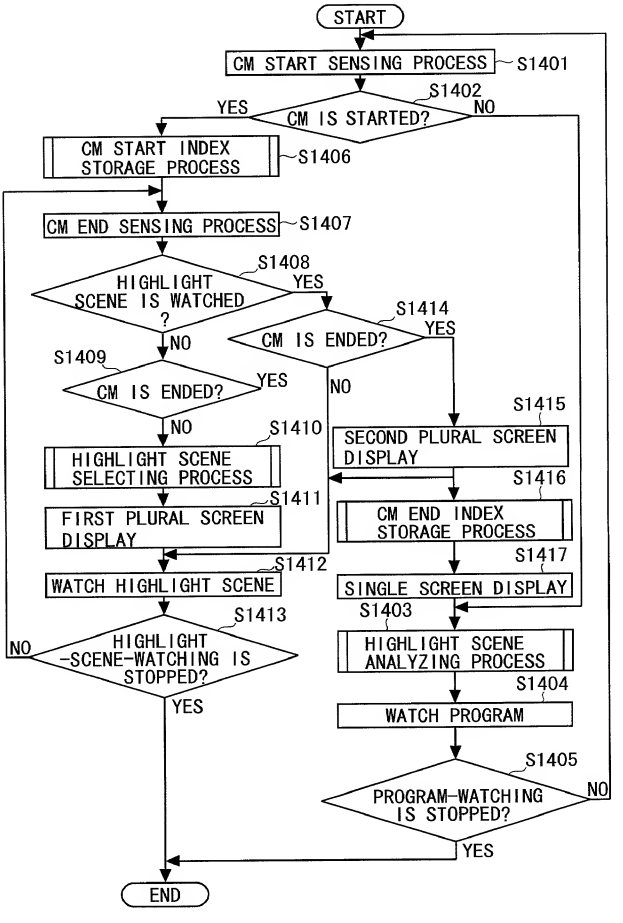
START
CM START SENSING PROCESS
S1401
S1402
CM IS STARTED?
YES
NO
CM START INDEX STORAGE PROCESS
S1406
CM END SENSING PROCESS
S1407
S1408
HIGHLIGHT SCENE IS WATCHED ?
YES
NO
S1414
CM IS ENDED?
YES
NO
S1409
CM IS ENDED?
YES
NO
S1415
SECOND PLURAL SCREEN DISPLAY
S1410
HIGHLIGHT SCENE SELECTING PROCESS
S1411
FIRST PLURAL SCREEN DISPLAY
S1416
CM END INDEX STORAGE PROCESS
S1417
SINGLE SCREEN DISPLAY
S1412
WATCH HIGHLIGHT SCENE
S1403
HIGHLIGHT SCENE ANALYZING PROCESS
S1404
WATCH PROGRAM
S1413
HIGHLIGHT -SCENE-WATCHING IS STOPPED?
NO
YES
S1405
PROGRAM-WATCHING IS STOPPED?
NO
YES
END

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FIG. 33

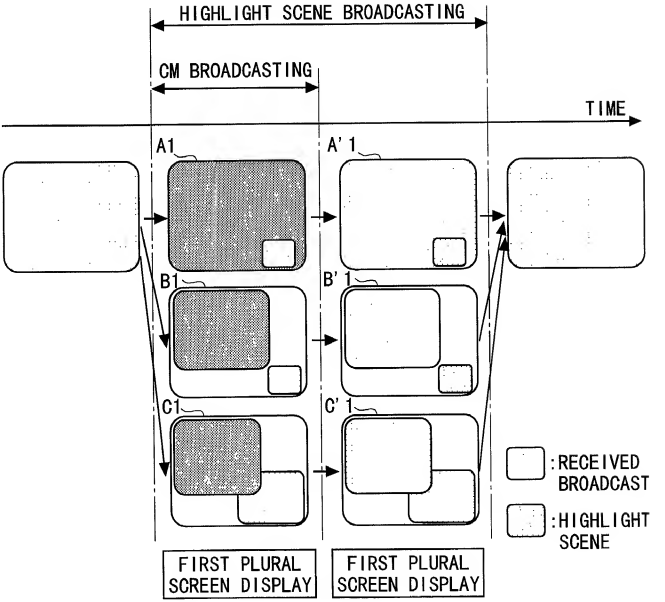


FIG. 34

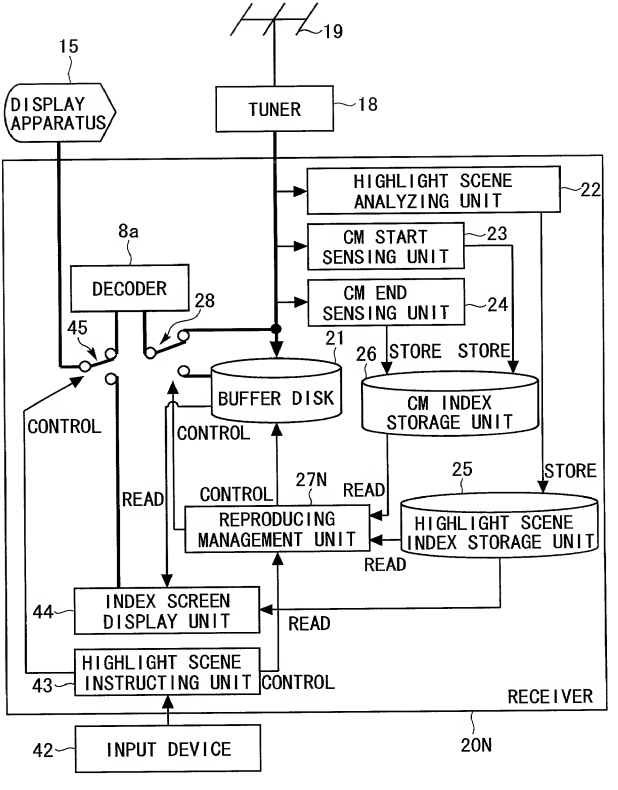

19
15
DISPLAY APPARATUS
TUNER
18
HIGHLIGHT SCENE ANALYZING UNIT
22
8a
CM START SENSING UNIT
23
DECODER
28
CM END SENSING UNIT
24
45
21
26
STORE
STORE
BUFFER DISK
CM INDEX STORAGE UNIT
CONTROL
CONTROL
25
STORE
READ
CONTROL
27N
READ
REPRODUCING MANAGEMENT UNIT
HIGHLIGHT SCENE INDEX STORAGE UNIT
READ
44
INDEX SCREEN DISPLAY UNIT
READ
HIGHLIGHT SCENE INSTRUCTING UNIT
43
CONTROL
RECEIVER
42
INPUT DEVICE
20N

FIG. 35

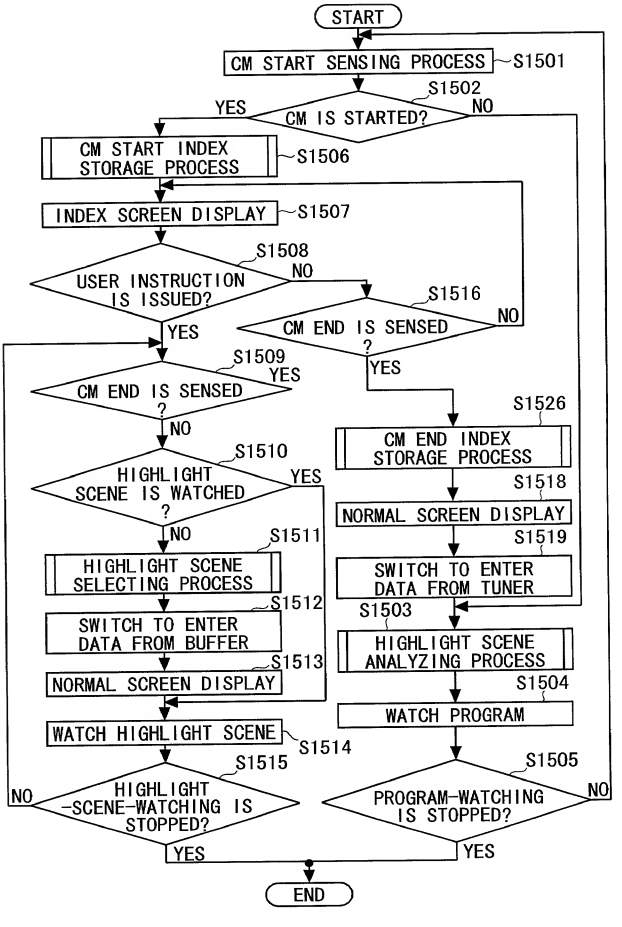

START
CM START SENSING PROCESS
S1501
S1502
CM IS STARTED?
YES
NO
CM START INDEX STORAGE PROCESS
S1506
INDEX SCREEN DISPLAY
S1507
S1508
USER INSTRUCTION IS ISSUED?
NO
YES
S1516
CM END IS SENSED ?
NO
YES
S1509
CM END IS SENSED ?
YES
NO
S1526
CM END INDEX STORAGE PROCESS
S1510
HIGHLIGHT SCENE IS WATCHED ?
YES
NO
S1518
NORMAL SCREEN DISPLAY
S1519
SWITCH TO ENTER DATA FROM TUNER
S1511
HIGHLIGHT SCENE SELECTING PROCESS
S1512
SWITCH TO ENTER DATA FROM BUFFER
S1513
NORMAL SCREEN DISPLAY
S1503
HIGHLIGHT SCENE ANALYZING PROCESS
S1504
WATCH PROGRAM
WATCH HIGHLIGHT SCENE
S1514
S1515
HIGHLIGHT -SCENE-WATCHING IS STOPPED?
NO
YES
S1505
PROGRAM-WATCHING IS STOPPED?
NO
YES
END

FIG. 36

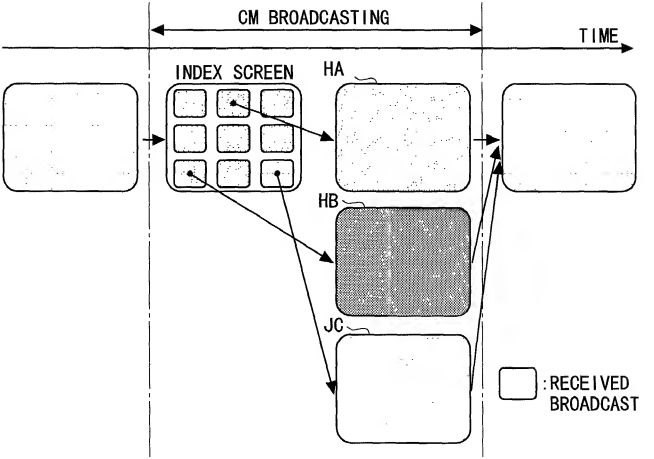

CM BROADCASTING
TIME
INDEX SCREEN
HA
HB
JC
:RECEIVED BROADCAST

FIG. 37

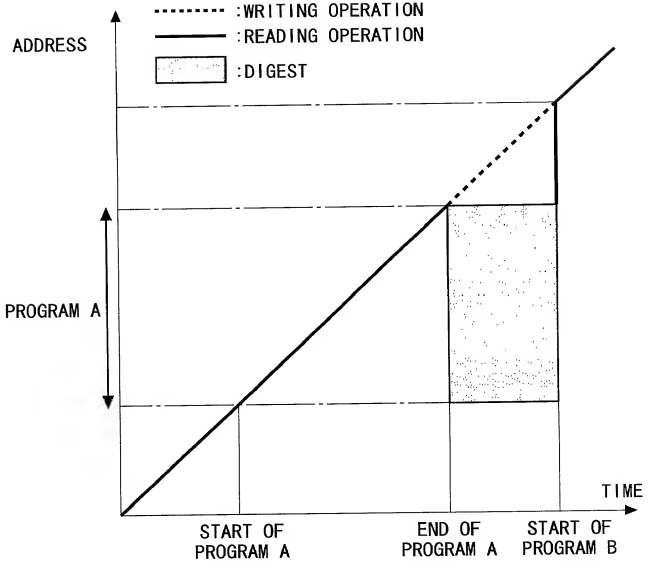
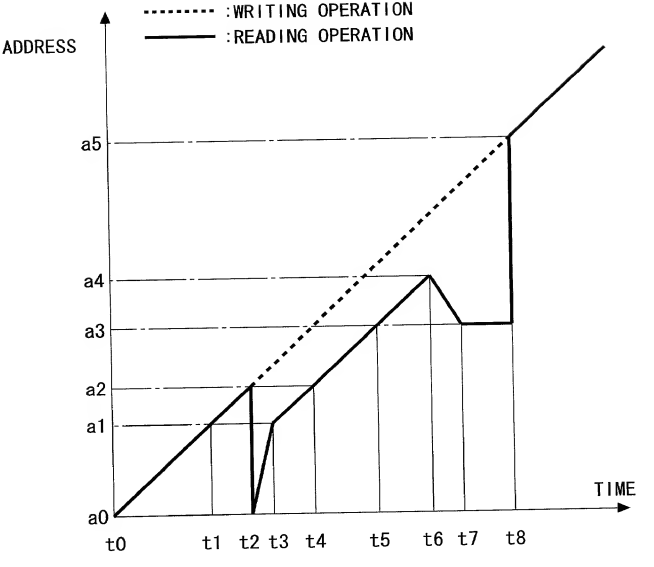

:WRITING OPERATION
:READING OPERATION
:DIGEST
ADDRESS
PROGRAM A
TIME
START OF PROGRAM A
END OF PROGRAM A
START OF PROGRAM B

FIG. 38


:WRITING OPERATION
:READING OPERATION
ADDRESS
a5
a4
a3
a2
a1
a0
TIME
t0
t1
t2
t3
t4
t5
t6
t7
t8